

ENVIRONMENTAL CONTROL SYSTEM FOR AN AIRCRAFT

ABSTRACT

(029) An environmental control system for an aircraft includes a vapor cycle system for circulating a refrigerant through a fuel cooled condenser, a primary evaporator wherein the expanded refrigerant is used to provide cooling for a cooling medium and a secondary evaporator. An air cycle system is included having a compressor system for providing compressed air, a system to cool the compressed air, a system to expand the cooled and compressed air, a heat exchanger for receiving the expanded air to provide cooling for a cooling medium passed through the secondary evaporator of the vapor cycle system wherein the compressed air is cooled prior to expansion. A fuel to air heat exchanger located between the compressor system and the secondary evaporator of the vapor cycle system for receiving fuel after it is passed through the condenser of the vapor cycle system and cooling the compressed air from the compressor system.